Health-Related Quality of Life in Low-Income Older African Americans*

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Abstract:
This study examined the relationships among comorbid conditions, symptom stress, depression, functional status and health-related quality of life (HRQOL) in low-income older African Americans with chronic diseases. A convenience sample of 83 older African American adults living in subsidized housing for elders participated in the study. Data were collected in face-to-face interviews. Participants reported lower scores on HRQOL than the SF–36 norms for age 60 or older in the general U.S. population. Comorbid conditions, symptom distress, depression, and functional status significantly predicted both the physical ($F = 38.92, p < .001$) and mental ($F = 23.21, p < .001$) health components of HRQOL, accounting for 63% of variance in the SF–36 physical health score and 55% of the variance in the SF–36 mental health score. The findings suggested that developing interventions to assist older African Americans to better manage their symptoms and depression are of prime importance for improving HRQOL.

Article:
Health-related quality of life (HRQOL) reflects the consequences of disease for an individual's life (Maille, Kaptein, de Haes, & Everaerd, 1996), and it is one of the most commonly used measures for assessing the impact of illness on individuals (Ashing-Giwa, 2005). People with chronic conditions have been shown to have worse HRQOL than people without these illnesses (Dominick, Ahern, Gold, & Heller, 2004). Husaini and Moore (2004), for example, found that older African Americas with arthritis reported lower life satisfaction than their counterparts without arthritis.

According to the Centers for Disease Control and Prevention (CDC, 2006a), 80% of older adults in the United States have at least one chronic illness, and 50% have two or more. Chronic illnesses are particularly burdensome for minority groups. Death rates for heart disease, stroke, cancer, and diabetes are much higher in African Americans than in White Americans (CDC, 2006b). In 2001, for example, mortality for heart disease was 40% higher for African American adults than for Whites (CDC, 2006c), and 49.9% of African Americans with diabetes died, compared to 22.1% of Whites (Department of Health and Human Service, 2004). Moreover, more African American older adults (41%) rated their health as fair or poor compared to older Whites (29%; Center for Chronic Disease Control and Prevention, 2005a), and older African American adults are at high risk of having poorer overall HRQOL than Whites (Sharupski et al., 2007).

Improving years of quality life and eliminating health disparities are major goals of Healthy People 2010 (CDC, 2005b). However, little is known about how and to what extent chronic conditions lead to poor HRQOL in low-income older African Americans. Consequently, this study was conducted to enhance understanding of factors related to poor HRQOL in this population.

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BACKGROUND

HRQOL has been defined as an individual's perception of physical and mental health (Center for Chronic Disease Control and Prevention, 2006d); it is a multidimensional construct that includes physical functioning, role limitations, mental health, social functioning and general health perceptions (Ware, Kosinski, & Keller, 1994). HRQOL has been used to measure morbidity and mortality, capture psychological and physiological dimensions of illness (Franks, Muennig, Lubetkin & Jia, 2006) and predict hospital utilization and survival (Parkerson & Gutman, 2000). HRQOL has also been identified as an outcome indicator that is sensitive to healthcare interventions (Mitchell, Heinrich, Moritz, & Hinshaw, 1997).

Wilson and Cleary (1995)'s HRQOL model suggested that biological and physiological variables, symptom status, functional status, general health perceptions, characteristics of the individual, and characteristics of the environment have an effect on patients' overall quality of life. According to the model, biological and physiological variables affect symptom distress, which in turn influences functional status, which affects general health perceptions and overall quality of life. Using the model as a conceptual framework, this study examined the relationships of comorbid conditions, symptom distress, depression, and functional status to HRQOL.

Chronic comorbid conditions have consistently been associated with declines in physical functioning, perceived health and mortality (Gijsen et al., 2001; Kriegsman, Deeg, & Stalman, 2004). Further, older adults with more comorbid conditions report poorer HRQOL (Maddigan, Feeny, & Johnson, 2005; Wijnhoven, Kriegsman, Hesselink, Hann, & Schellevis, 2003). Comorbid conditions also have negative effects on physical role functioning, bodily pain, and the physical dimensions of HRQOL (Wensing, Vingerhoets, & Grol, 2001).

Numerous studies have reported that symptoms are important contributors to HRQOL (Camacho et al., 2002; Erickson, Williams, & Gruppen, 2004; Sousa, 2003; Stover, Skelly, Holditch-Davis, & Dunn, 2001). For example, symptoms and physical complaints associated with diabetes have been shown to be strong predictors of HRQOL (Camacho et al., 2002). Symptoms have also been found to be related to poorer perceptions of HRQOL in the domains of general health, physical role, social functioning, and bodily pain among African American women with Type 2 diabetes (Stover, Skelly, Holditch-Davis, & Dunn, 2001).

Depression is also a predictor of HRQOL, and it may interact with chronic conditions to further decrease HRQOL (Gaynes, Burns, Tweed, & Erickson, 2002). For example, among patients with coronary artery disease, depression was strongly associated with greater symptoms, worse HRQOL, greater physical limitations, and poorer overall general health (Ruo, et al., 2003). Ibrahim and colleagues (2002) found that among older African American patients with arthritis, higher depression was associated with lower quality of life. Wolinsky, Miller, Anderson, Malmstrom, and Miller (2004) reported that among middle-aged African Americans with chronic diseases, depressive symptoms were a significant predictor of HRQOL.

Functional status in older adults is measured in three major domains: activities of daily living, instrumental activities of daily living, and mobility (Spector, 1996). Westlake and colleagues (2002) reported that functional status, in combination with demographic variables, social support, spirituality, and neuroticism, explained 26% of the variance in the physical health component of HRQOL. Similarly, Ferrucci and colleagues (2000) reported that physical functioning was an important predictor of HRQOL in older adults with chronic conditions.

Although these studies have examined factors associated with chronic illness in the general population, the impact of chronic illness on HRQOL in low-income older African Americans has not been fully investigated. This study, therefore, was designed to characterize HRQOL in low-income older African Americans and examine its relationship to comorbid conditions, symptom distress, depression, and functional status. The following research questions were addressed:

1. What is HRQOL among low-income older African Americans compared to the norms for the U.S. general population, aged 60 or older?
2. What are the relationships among comorbid conditions, symptom distress, depression, functional status, and HRQOL among low-income older African Americans?

METHODS

Design

A descriptive correlational design was used to examine the relationships of comorbid conditions, symptom distress, depression, and functional status to HRQOL in low-income older African Americans.

Setting and Participants

A convenience sample was recruited from three subsidized housing residences managed by the local housing authority in the southeastern United States. Flyers describing the study were posted in School of Nursing managed health centers at each site. All of the participants self-identified as African Americans and had at least one of the chronic illnesses listed by the CDC (2005) as the leading causes of disability and death in this population (cardiovascular disease, chronic obstructive pulmonary disease [COPD], type 2 diabetes, and arthritis). All were able to speak and read English. Individuals with below normal cognitive functioning (not oriented to time, place, or person, or with known dementia) were excluded from the study. A total of 87 African-American residents aged 60 or older volunteered to participate. Two residents subsequently declined to participate and two with known dementia were excluded. Thus, the final sample included 83 low-income older African Americans with self-reported cardiovascular disease, COPD, type 2 diabetes, or arthritis. A power analysis was used to estimate sample size. Sample size of 67 was estimated to provide 90% power at an alpha level of 0.05 to detect a R2 of .20 for four independent variables using multiple regression (Nquery Advisor Release 6.0).

Procedures

Approval for the study was obtained from the University Institutional Review Board and the local Housing Authority. Data were collected on demographic variables, comorbid conditions, symptom distress, depression, functional status, and HRQOL in face-to-face interviews by the author and trained research assistants in participants' homes. Interviews averaged 40–50 min each. Participants received a $10.00 grocery gift card as a small token of appreciation upon completion of the interview.

Measures

During the interviews, participants were asked about the presence of cardiac disease, hypertension, diabetes, COPD, and arthritis. Having two or more of these chronic conditions together was considered to constitute comorbid conditions.

Symptom distress was measured using the Symptom Distress Scale (SDS; McCorkle & Young, 1978), which has 13 items measuring nausea, appetite, insomnia, pain, fatigue, bowel, concentration, appearance, breathing, outlook, and cough. Responses range from no symptom (1) to severe symptom (5). Items are summed and scores between 13 and 24 indicate mild symptom distress, 25 to 32 indicate moderate symptom distress, and 33 to 65 indicate severe symptom distress. Internal consistencies for the SDS have ranged from 0.70 to 0.92 in 47 studies of chronic diseases including African Americans (McCorkle, Cooley & Shea, 2000). Construct validity has been established (McCorkle & Benoliel, 1983). Cronbach's alpha was 0.76 in this study.

The 15-item Geriatric Depression Scale-Short Form (GDS-S) was used to assess depressive symptoms. Items are rated on a dichotomous scale scored either 0, indicating no depression, or 1, indicating depressed. Scale items are summed and a score of 9 or above indicates depression. Both the sensitivity and specificity of the GDS-S have been reported to be satisfactory with the elderly (Stiles & McGarrahan, 1998), and reliability and convergent validity have been established with older adults (Sheikh & Yesavage, 1986) and with minority populations (Flacker & Spiro, 2003; Jang, Borenstein, Chirboga, & Mortimer, 2005). Cronbach's alpha was 0.77 in this study.

Functional status was measured by the Instrumental Activities of Daily Living (IADL) scale (Lawton & Brody, 1969). The IADL assesses elders' functional status and performance of tasks that require a combination of high levels of physical and cognitive functioning, such as using the telephone, preparing meals, keeping house, arranging transportation, taking responsibility for medications and managing finances (Angel, & Frisco, 2002). The IADL is an 8-item scale with a total score of 0–8 (0 = unable to function, 1= normal function). A score between 5 and 8 indicates higher functioning, and a score below 5 indicates poor functioning. Reliability and sensitivity have been established (Lawton & Brody, 1969). The IADL has been used with older African Americans (Upchurch & Mueller, 2005). Cronbach's alpha was 0.80 in this study.

Health-related quality of life was measured by the Medical Outcomes Study Short Form (SF–36) Health Survey. The SF–36 is a multidimensional, generic, and reliable measure that includes two major constructs: the physical component summary (PCS) and the mental component summary (MCS). The SF–36 uses Likert scaling and a standardized algorithm to calculate scores. Higher scores indicate more positive health and better quality of life. Reliability and construct validity are well established (McHorney, Ware, & Raczek, 1993; Ware & Sherbourne, 1992). The SF–36 has demonstrated alpha coefficients ranging from 0.78 to 0.93 for subscales (McHorney, Ware, Rachel, & Sherbourne, 1994). Psychometric properties have been established with older African American and White adults with chronic illnesses (Wolinsky & Stump, 1996). Cronbach's alphas were 0.89 for the PCS and 0.87 for the MCS in this study.

Data Analysis

Descriptive statistics were used to examine the characteristics of the sample and assess variable distribution. A one sample t-test was used to compare the SF–36 scores to the norms for those age 60 and older in the U.S. general population to answer research question one. Missing SF–36 scores were replaced by mean subscale values (Ware, Kosinski, & Keller, 1994). Multiple regression was used to answer research question two. Two separate regression models were fit to investigate the relationships between the independent variables (comorbid conditions, symptom distress, depression, and functional status) and each of the dependent variables (SF–36 PCS and SF–36 MCS). When fitting each of the two models, the four independent variables were entered simultaneously. SPSS (version 11.5) was used for analyses. Alpha was set at $p < .05$ for all tests.

RESULTS

The age of participants ranged from 60 to 90 years, and 73% were women. Nearly all participants were below the poverty level. All participants also reported a religious affiliation. Almost half had less than 12 years of education. Comorbid conditions were experienced by most (79%), and more than half (53%) rated their health as fair or poor. The most frequent chronic illness was hypertension, followed by arthritis, diabetes, heart disease, and COPD (Table 1). The majority of the participants (65%) had mild symptom distress, but 30% experienced moderate and 5% severe symptom distress. The most commonly reported symptoms associated with distress were fatigue (77%), pain (76%), cough (59%), and insomnia (54%). Participants reported little depression, as measured

TABLE 1
Demographic Characteristics of Sample and Mean Scores for Symptom Distress Scale (McCorkle & Young, 1978), Geriatric Depression Scale-Short Form, and Functional Status Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969)

Demographic Variables	*M*	*SD*	*Frequency*	*Percent*
Gender				
Male			21	26.6
Female			58	73.4
Education				
Less than high school			40	48.2
High school			26	31.3
Some college or higher religion			16	19.2
Religious Affiliation				
Protestant			29	37.2
Catholic			8	10.3
Other			41	52.5
Income				
Less than $10,000			77	95.1
$10,000 to $19,999			4	4.9
Types of chronic illnesses				
Heart disease			14	16.9
Hypertension			29	34.9
Diabetes			16	19.3
Chronic obstructive pulmonary disease			3	3.6
Arthritis			21	25.3
Variables				
Symptom distress	22.71	±5.71		
Depression	3.56	±2.16		
Functional status	6.56	±1.45		

Note. $N = 83$.

by the GDS (M = 3.56, SD =2.16). Their mean score on the IADL was 6.59 (SD = 1.45), indicating that they were functioning independently.

Research Question One

The HRQOL physical (M = 46.04, SD = 15.76 vs. M = 61.79, SD = 6.99, p <.001) and mental health (M = 58.52, SD = 13.72 vs. M = 71.17, SD = 4.5 1, p <.001) scores for participants were lower than norms for those 60 or older in the general population (Ware, Kosinski, & Keller, 1994). Participants scored lower on the physical component of HRQOL (M = 46.04, SD = 15.76), which includes physical functioning, role-physical, bodily pain, and general health, than on the mental component of HRQOL (M = 58.52, SD = 13.72), which includes vitality, social functioning, role-emotional, and mental health (Table 2). Those with COPD reported the lowest score on the physical component of HRQOL, followed by those with hypertension, diabetes, arthritis, and heart disease. Participants with Type 2 diabetes had the lowest scores on the mental component of HRQOL, followed by those with hypertension, arthritis, COPD, and heart disease.

Research Question Two

When bivariate correlation matrixes of the SF–36 PCS and MCS were examined with comorbid conditions, symptom distress, depression, and functional status, correlations ranged from r =.09 to r =.65 (Table 2). A higher number of comorbid conditions were related to a lower score on the physical component of HRQOL. A higher amount of symptom distress and higher depression were associated with lower scores on both the physical and mental components of HRQOL. A lower level of functioning was also associated with lower scores on both the physical and mental components of HRQOL.

TABLE 2
Correlation Matrix Among Study Variables

	1	2	3	4	5	6
1. Comorbid conditions	1.0					
2. Symptom distress	.26*	1.0				
3. Depression	.09	.56**	1.0			
4. Functional status	–.08	–.24*	–.25*	1.0		
5. HRQOL: Sf-36 PCS	–.43*	–.65**	–.58**	.38**	1.0	
6. HRQOL: SF-36 MCS	–.22*	–.62**	–.59**	.36*	.65**	1.0

Note. $N = 83$. HRQOL = health-related quality of life, SF-36 = Medical Outcomes Study Short Form Health survey, PCS = physical component summary, MCS = mental component summary.
*$p < .05$. **$p < .001$.

TABLE 3
Multiple Regression Analysis of Comorbid Conditions, Symptom Distress Level, Depression, and Functional Status on Physical Component of Health-Related Quality Of Life (Medical Outcomes Study Short Form Health Survey Physical Component Summary)

Variables	*B*	*SE (β)*	β	*t*	*P*
Comorbidities	–11.74	2.58	–.31	–4.55	.000
Symptoms	–1.27	.23	–.46	–5.46	.000
Depression	–1.45	.55	–.21	–2.61	.011
Functional status	2.67	.73	.25	3.67	.004

Note. $N = 83$. $R^2 = .63$, $F = 38.92$, $p < .001$.

TABLE 4
Multiple Regression Analysis of Comorbid Conditions, Symptom Distress Level, Depression, and Functional Status on Mental Component of Health-Related Quality Of Life Medical Outcomes Study Short Form

Variables	*B*	*SE (β)*	β	*t*	*p*
Comorbidities	–3.93	2.65	–.12	–.16	.14
Symptoms	–.81	.24	–.33	–3.41	.001
Depression	–2.40	.56	–.40	–4.24	< .001
Functional status	1.82	.74	.19	2.45	.02

Note. $N = 83$. $R^2 = .55$, $F = 23.21$ ($p < .001$).

Multiple regression analyses were conducted to determine the ability of comorbid conditions, symptom distress, depression, and functional status to predict the PCS and the MCS. The four predictor variables were entered into two separate linear regression analyses. In the first model, comorbid conditions, symptom distress, depression and functional status significantly predicted the physical component of HRQOL, accounting for 63% of the variance in this score (Table 3). In the second model, symptom distress, depression, and functional status significantly predicted the mental health component of HRQOL, accounting for 55% of the variance in the score (Table 4). A higher number of comorbidities, higher symptom distress, and higher depression were associated with poorer HRQOL. Symptom distress, depression, and functional status were significant predictors of both physical and mental components of HRQOL.

DISCUSSION

This study examined the relationships among comorbid conditions, symptom distress, depression, functional status, and HRQOL among low-income older African Americans. A majority of the elders perceived their HRQOL to be poorer than that of a normative sample and reported their health as fair to poor. This finding is congruent with the findings of previous studies that African Americans report lower overall HRQOL (Ibrhim, Burant, Siminoff, Stoller, & Kwoh, 2002).

The sample reported poorer perceptions of the physical component of the HRQOL than the mental component. Although the study did not specifically examine the relationship between religious affiliation and HRQOL, the fact that the great majority of participants had a religious affiliation may have contributed to their higher scores on the mental component. Other studies have found that religious affiliation had a positive effect on individuals' physical and mental well-being and health outcomes (Levin, 2001; Upchurch & Mueller, 2005).

The poor perceptions on the physical component of the HRQOL may reflect the fact that the majority of the sample had more than two chronic conditions, and a greater number of comorbid conditions was associated with poorer HRQOL. Other studies have also reported that when chronic medical conditions occur together, there is a significant decrease in HRQOL (Maddigan, Feeny, & Johnson, 2005). Wensing et al. (2001), for example, found that comorbid conditions had a negative effect on physical role and bodily pain in primary care patients, and Wijohoven, Kreigsman, Hesselink, Haan, and Schellevis (2003) found that the presence of comorbid conditions decreased HRQOL in COPD and asthma patients. In this study, participants with COPD had the lowest scores on the physical component of HRQOL. Schlenk and colleagues (1998) also found that patients with COPD had lower quality of life than those with other chronic illnesses. This may be due to the fact that adults with COPD experience distressing symptoms such as dyspnea and functional limitations.

Those with Type 2 diabetes had the lowest score on the mental component of HRQOL. This is consistent with previous studies that found that individuals with diabetes were more likely to be clinically depressed (McKellar, Humphrey, & Piette, 2004) and to report poor HRQOL (Blaum, Ofstedal, Langa, & Wray, 2003; Brown et al., 2004).

Symptom distress was the primary predictor of both the physical and mental components of HRQOL. Greater symptom distress was strongly associated with lower HRQOL levels in these low-income older African Americans. Similarly, Camacho and colleagues (2002) and Gulliford and Mahabir (1999) found that symptom distress was a major determinant of HRQOL in patients with Type 2 diabetes.

Depression was also an important factor in HRQOL in this sample. Similarly, Ibrahim and colleagues (2002) found that among older African Americans with arthritis, higher depression scores were associated with lower quality of life, and Wolinsky and colleagues (2004) reported that clinical depressive symptoms were a significant predictor of HRQOL in middle-aged African Americans with chronic diseases. Finally, as in previous studies (Juenger et al., 2002; Westlake et al, 2002), functional status was associated with HRQOL in this study. Lower functioning was a significant predictor of HRQOL.

Although previous studies have reported that the burden of disease is high among African Americans (Franks, Muennig, Lubetkin, & Jia, 2006) and African Americans reported poorer HRQOL than whites, factors specifically related to HRQOL in low-income older African Americans have not been adequately studied. This investigation provides a better understanding of HRQOL in this group. The findings suggest that symptom distress, depression, and functional status account for the HRQOL of low-income older African Americans.

Limitations

These findings must be interpreted with caution for several reasons. The sample included only residents of subsidized housing, and the low-income status of the sample might have impacted HRQOL. The presence of a health center in the housing centers may have had an impact on which elders chose to participate. Also, the study used a cross-sectional design and convenience sampling, and thus the causal relationships of symptom distress and depression to HRQOL could not be established. Finally, several factors that have been associated with HRQOL, including spiritually, social support, barriers to care, and racism, were not examined.

Implications for Nursing Practice

Nevertheless, the findings are important for community health nurses who work with economically disadvantaged older African Americans. The study suggests that community health nurses should consider symptoms, depression, and functional status in clinical assessments and recognize the impact of these factors on

HRQOL. Further, symptom distress was found to be a major factor in HRQOL in this study, intervention programs for older African Americans with chronic illnesses should emphasize effective ways to manage symptoms. Using religious coping to decrease depression and promote mental well-being (Jang, Borenstein, Chiriboga, & Mortimer, 2005) may also be an avenue for intervention with this population (Jang, Graves, Haley, Small, & Mortimer, 2003). Given the high prevalence of chronic illnesses in older African Americans, developing culturally competent and community-based interventions to manage symptoms and depression and to improve functioning is essential for low-income older African Americans. Finally, efforts to assist the low-income among this vulnerable population may be especially beneficial to individuals, families, and communities.

CONCLUSION

HRQOL of low-income older African Americans was found to be lower than a national sample. Future research with a larger sample is needed to examine the effect of spirituality and income. Interventions to assist these low-income older African Americans to better manage their symptoms and depression are of prime importance for improving HRQOL.

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